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10/568,450	03/16/2006	Isamu Yoshi	L9289.06111	1203

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EXAMINER	
YU, LIHONG	
ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,450	YOSHI, ISAMU	
	Examiner	Art Unit	
	LIHONG YU	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments received on September 22, 2010 have been fully considered but they are not persuasive.

(1) **Applicant's Arguments:** "Although Li may disclose calculating a power difference, as proposed in the Office Action, Li does not disclose controlling transmission power according to this calculated power difference. Instead, as acknowledged in the Office Action, Li discloses ordering and selecting clusters based on the calculated power difference (see Office Action page 4, lines 2-3, and Li cot. 9, lines 63-67). Nowhere does Li disclose the Applicant's claimed subject matter of controlling transmission power according to a power difference; and the Office Action cites nothing in Li to the contrary. Wesel is not cited in the Office Action for supplementing the teachings of Li in this regard".

Examiner's Response: As noticed by the Applicant, Li discloses calculating a power difference and ordering and selecting clusters based on the calculated power difference. Li discloses the receiver requests the transmitter to use the selected clusters in data transmission (see Li in Fig. 4 and col. 10, lines 1-3). Li has disclosed that each cluster has its associated power. Whence a cluster is selected for data transmission, its associated power is selected. Therefore, Li controls transmission power by selecting clusters.

(2) **Applicant's Arguments:** "Although the Office Action proposes that Wesel discloses distributing power evenly to each subcarrier of a subcarrier group (see Office Action page 5, lines 1-2), the Office Action does not propose that the power distributed by Wesel's system corresponds to a power difference or that such distributed power increases or decreases transmission power".

Examiner's Response: The Applicant's claim 1 has the limitation that power is distributed evenly to each subcarrier of the subcarrier group. The Examiner's prior art by Li teaches an invention for an OFDM system. However, Li does not disclose the fact that in an OFDM system, power is distributed evenly among subcarriers. Wesel is only cited to reveal the fact that power is evenly distributed across subcarriers in OFDM.

2. Applicant's arguments of the amended claims with respect to claim rejection under 35 USC 102 and 103 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150), and further in view of Kwon et al (US 6,151,328).

Consider claims 1 and 10:

Li discloses a multi-carrier communication apparatus (*see Li at the abstract, where Li describes an invention for partitioning sub-carriers in an OFDMA system*) comprising:

- a superimposing section that superimposes transmission symbols with a subcarrier group having a plurality of sub-carriers (*see Li at col. 5, lines 35-45, where Li describes that a base station periodically broadcasts pilot OFDM symbols to every subscriber; see col. 7, lines 36-49, where Li describes the pilot symbols cover the entire OFDM frequency bandwidth which is supported by a number of clusters; see col. 5, lines 18-27, where Li describes that a cluster contains at least one sub-carrier*);

- a control section that controls a combined transmission power of the subcarrier group on which the transmission symbols are superimposed (*see Li at Fig. 4, and col. 9, lines 55-67 and col. 10, lines 1-2, where Li describes a power calculation processing block 402 that performs power calculations for each cluster in pilot period, and a power calculation processing block 403 that performs power calculations for each cluster in data periods, a subtractor 404 that subtracts the power calculations for data periods from those in pilot periods, clusters are ordered and selected based on the power difference, and the selected cluster with desired power is sent to the base station to be allocated*); and

- a transmission section that transmits a multi-carrier signal obtained by controlling the combined transmission power of the subcarrier group (*see Li at col. 9, lines 65-67*

and col. 10, lines 1-3, where Li describes that once the clusters have been selected, the subscriber sends a request to the base station; see Li at Fig. 1B, and col. 6, lines 7-46, where Li describes that the feedback information from the subscriber to the base station is used by the base station to select one or more clusters for the subscriber and to establish a data link between the base station and the subscriber), wherein:

- the control section controls the combined transmission power of the subcarrier group, by distributing, to each subcarrier of the subcarrier group, a power control amount, the power control amount corresponding to a difference between a combined received power for the subcarrier group at a remote communication station and a desired target received power (*see Li at col. 8, lines 18-47, where Li describes that the power difference is calculated at a wireless subscriber, that is a remote communication station; the power difference is between the subcarrier cluster power during the pilot period, thus the desired target received power, and the subcarrier cluster power during the data traffic period*).

However, Li does not specifically disclose: (1), the above transmission power is evenly distributed to each sub-carrier of the subcarrier group, and (2), the above power control increases or decreases the combined transmission power of the subcarrier group.

Regarding (1) above, in an analogous art, Wesel teaches the transmission power is evenly distributed to each sub-carrier of the subcarrier group (*see Wesel at col. 1, lines 45-49, where*

Wesel describes the OFDM transmission system where power is distributed evenly across the subcarriers by the transmitter).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have that the transmission power is evenly distributed to each sub-carrier of the subcarrier group, as taught by Wesel, thus allowing for minimizing sensitivity to frequency-selective disturbances in the wireless channel, as is known in the art.

Regarding (2) above, in an analogous art, Kwon teaches a power control that increases or decreases the combined transmission power of a subcarrier group (*see Kwon in Fig. 4 and col. 5, lines 13-34, where Kwon describes an apparatus for controlling power in a CDMA system, a comparator 104 detects a difference between estimated receiving signal power and a threshold, a power up/down command generator 105 generates power up/down commands in response to the comparison result from the comparator 104, and the up/down commands are sent to a transmitter through an antenna; see Fig. 1, col. 3, lines 55-67 and col. 4, lines 1-6, where Kwon describes the transmitter receives the up/down commands through receiver 3 and controls the power of K antennas; see col. 8, lines 16-41, where Kwon describes an antenna for two subcarriers*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to include that the power control increases or decreases the combined transmission power of the subcarrier group, as taught by Kwon, thus allowing for power control in different channel environments, as discussed by Kwon (*see Kwon at col. 1, lines 41-60*).

Consider claim 2:

Li in view of Wesel and Kwon discloses the multi-carrier communication apparatus according to claim 1 above. Li discloses the superimposing section comprises an acquisition section that acquires the same transmission symbols having an equal number to the number of the plurality of subcarriers of the subcarrier group; and the superimposing section superimposes the acquired same transmission symbols with the subcarrier group (*see Li at col. 7, lines 10-33, where Li describes signal spreading over multiple subcarriers, one QPSK symbol can be repeated over four subcarriers of two OFDM symbols, in other words, two OFDM symbols is transmitted by four subcarriers; see col. 16, lines 1-8, where Li describes a plurality of pilot symbols for each cluster of subcarriers*).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150) and Kwon et al (US 6,151,328), as applied to claim 2 above, and further in view of Brink et al (US 6,038,450).

Consider claim 3:

Li in view of Wesel and Kwon discloses the multi-carrier communication apparatus according to claim 2 above. Li discloses OFDM modulation (*see Li at the Abstract*).

However, Li does not specifically disclose the OFDM system comprises: a repetition section that duplicates a transmission bit, and a modulation section that modulates the duplicated transmission bit using an M-ary number corresponding to the number of the plurality of sub-carriers of the subcarrier group to acquire the same transmission symbols.

In an invention for OFDM modulation, Brink teaches a repetition section that duplicates a transmission bit (*see Brink at Fig. 2 and col. 5, lines 11-45, where Brink describes an OFDM transmitter that has a coding block 44 that receives data stream and introduces redundancy*), and a modulation section that modulates the duplicated transmission bit using an M-ary number corresponding to the number of the plurality of sub-carriers of the subcarrier group to acquire the same transmission symbols (*see Brink at Fig. 2 and col. 5, lines 11-45, where Brink describes the coded data is input to an OFDM modulation that has a symbols of $2N_d$ bits which is used to modulate N_d sub-carriers*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have the above repetition section and modulation section, as taught by Brink, thus allowing for implementing a soft handover system, as discussed by Brink (*see Brink at col. 3, lines 9-12*).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150) and Kwon et al (US 6,151,328), as applied to claim 2 above, and further in view of Todd (5,357,284).

Consider claim 4:

Li in view of Wesel discloses the multi-carrier communication apparatus according to claim 2 above. Li discloses QPSK modulation (*see Li at col. 7, lines 14-32, where Li describes quadrature phase shift keying (QPSK) modulation*).

However, Li does not specifically disclose the QPSK system comprises: a separating section that separates each of the transmission symbols into an in-phase component and an orthogonal component; and substituting section that substitutes one of the in-phase component and the orthogonal component between the transmission symbols; and the superimposing section superimposes the transmission symbols with the subcarrier group after substituting one of the in-phase component and the orthogonal component.

In an invention for QPSK modulation, Todd teaches a separating section that separates each of the transmission symbols into an in-phase component and an orthogonal component (*see Todd at Fig. 8, item 822 and col. 14, lines 6-16, where Todd describes a QPSK modulated signal is recovered into I and Q signals by mixers 802 and 803*), and substituting section that substitutes one of the in-phase component and the orthogonal component between the transmission symbols, and the superimposing section superimposes the transmission symbols with the subcarrier group after substituting one of the in-phase component and the orthogonal component (*see Todd at Fig. 8, item 822 and col. 15, lines 15-36, where Todd describes a combining logic 822 that interleaves alternate bits from I and Q data streams 824 and 826 respectively from the outputs of latches 816 and 818 to form single output bit stream for transmission*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have the above separating section and substituting section, as taught by Todd, thus allowing for easy signal transmission, as discussed by Todd (*see Todd at col. 2, lines 25-35*).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIHONG YU whose telephone number is (571) 270-5147. The examiner can normally be reached on 8:30 am-7:00 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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